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Acute kidney injury with gross hematuria and IgA nephropathy after COVID-19 vaccination

To the editor: The mRNA coronavirus disease 2019 (COVID-19) vaccines induce an IgG response that prevents people from contracting severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Interestingly, there are now at least 6 cases of gross hematuria reported in patients with a history of biopsy-proven IgA nephropathy (IgAN), involving both mRNA vaccines.[1–3] All of the previous patients were treated with supportive therapy with rapid resolution of hematuria and no acute kidney injury (AKI). It has been reported in preclinical trials that nasal shedding of SARS-CoV-2 still occurred after vaccination with both mRNA vaccines, suggesting a lack of a mucosal IgA response.[1,4] We also cared for 2 patients who had prior biopsy-proven IgAN, who developed gross hematuria after their second dose of the Pfizer vaccine, without a preceding COVID-19 infection. Table 1 outlines the clinical data. Our first patient presented 5 days after his second dose, with nonspecific myalgias, chills, headache, dysuria, and gross hematuria within 24 hours of initial symptoms. Previous IgAN flares in this patient were precipitated by upper respiratory infections and were limited to gross hematuria with no AKIs and no requirement for steroids in the past. His postvaccine workup was notable for AKI, with a serum creatinine level of 3.53 mg/dl and a urine protein–creatinine ratio of 3.0. He was empirically started on steroids with recovery to baseline renal function at 1 month and recovery to baseline proteinuria within 2 months. Our second patient developed gross hematuria within 24 hours of receiving his second dose. His hematuria resolved after 3 days with supportive therapy only. To our knowledge, we are the first to report an IgAN flare that has led to an AKI that resolved with steroid therapy. We agree that it is not clear how a nonmucosal immune challenge led to an IgAN exacerbation; however, the delayed-type hypersensitivity reactions seen in our patients suggest a cell-mediated immune response, not an antibody response. We offer further evidence that patients with IgAN warrant close monitoring after receiving their second mRNA vaccine dose.

DISCLOSURE

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Table 1 | Patient characteristics, treatment, and symptoms

Patient characteristics	Patient 1	Patient 2
Year of IgAN diagnosis	2018	2020
Exacerbations since diagnosis	1. February 2019: UPCR 3.2 after URI; 2. February 2020: UPCR 2.6 after URI	None
Current treatment	Lisinopril and prednisone	Lisinopril
Baseline serum creatinine level, mg/dl	0.8	1.0
Peak serum creatinine level after COVID-19 vaccine, mg/dl	3.53	1.16
Last UPCR (gm/g) before COVID-19 vaccine	1.56	0.61
Last UACR (mg/g) before COVID-19 vaccine	NA	341
Gross hematuria	Yes	Yes
Other symptoms	Fevers, chills, body aches, dysuria	Body aches
UPCR (gm/g) after COVID-19 vaccine	4.97	0.92
UACR (mg/g) after COVID-19 vaccine	3160	320
Hematuria 5 days after COVID-19 vaccine	Present	Resolved

COVID-19, coronavirus disease 2019; IgAN, IgA nephropathy; NA, not applicable; UACR, urine albumin–creatinine ratio; UPCR, urine protein–creatinine ratio; URI, upper respiratory infection.